

2016

Highly sensitive fluorescent dye for lipid droplet

LipiDye <Lipid Droplet Green>

More information : http://www.funakoshi.co.jp/exports_contents/80682

LipiDye is a highly sensitive, novel fluorescent dye for detection of lipid droplets. Compared to conventional dyes (Nile Red or boron-dipyrromethene), LipiDye has a higher S/N ratio and photostability. LipiDye can be used for both live and fixed cells.

※ This compound has been commercialized under a license from Nagoya University.
Yamaguchi E., *et al.*, *Angew. Chem. Int. Ed.*, **54** : 4539~4543 (2015).

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**High sensitivity
and S/N ratio**
- 

**High photo-
stability**
- 

**Low
cytotoxicity**
- 

**For both
live and fixed cells**

Features

High sensitivity

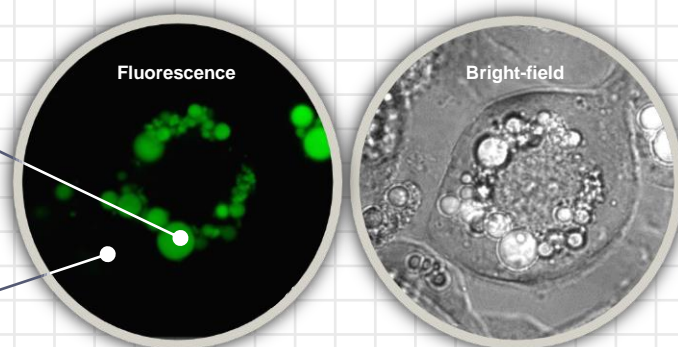
Selectively incorporated into lipid droplets and gives out green fluorescence.

Low background

No fluorescence emission in aqueous solution. Very low non-specific fluorescence emission in cytoplasm.

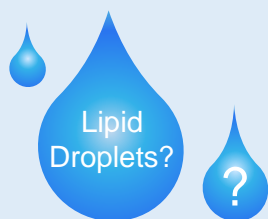
Versatility

Small lipid droplets (0.1 μm) in non-adipocytes can be also detected.



Detection of lipid droplets by LipiDye
(Excitation / Emission: 405 nm / 521-530 nm)

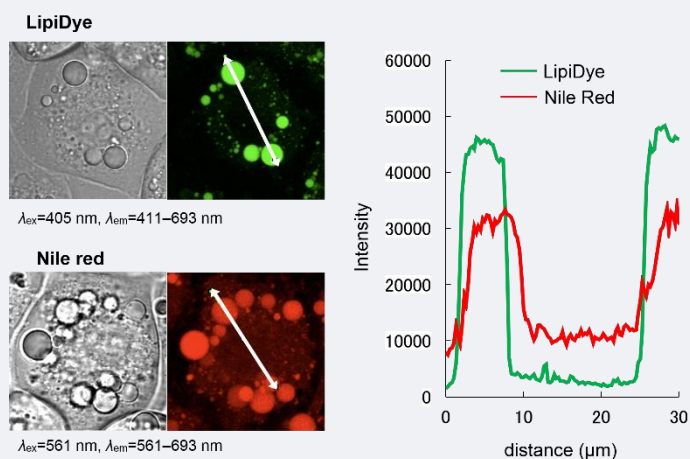
Reagent	Live Cells	Fixed Cells	Time Lapse	Multiple Staining	S/N Ratio
LipiDye	○	○	○	○	High
Nile Red	○	○	○	✗	Low
Reagent B	○	○	✗	○	Middle
Reagent T	✗	○	✗	○	High
Oil Red O	✗	○	✗	✗	Low



Lipid droplets are the organelles, observed in ubiquitous cells.

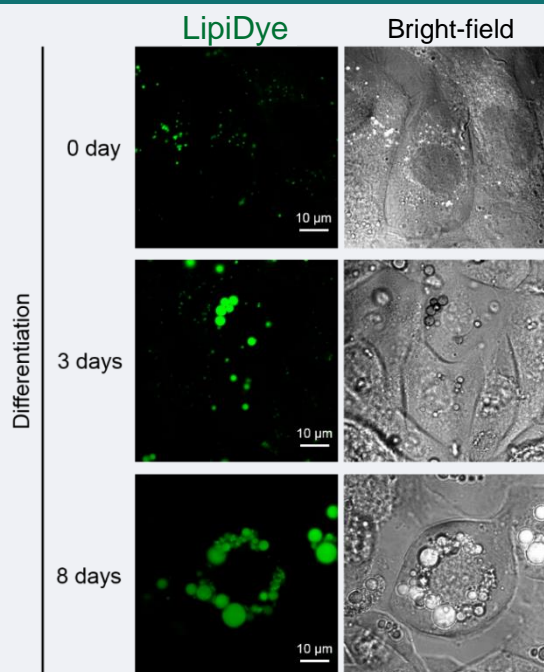
Lipid droplets store neutral lipids, and frequently observed in the adipose tissues. Those are considered to play a role in energy storage or lipid turnover. Recent studies reported that lipid droplets can be also found in ubiquitous. The size of lipid droplets in adipocytes is >10 μm and can be detected by conventional lipid droplet probes like Nile Red. However, the size of lipid droplets in non-adipocytes is too small (~0.1 μm) to be detected by Nile Red or other probes. LipiDye can detect such small lipid droplets in non-adipocytes.

Comparison data against Nile Red



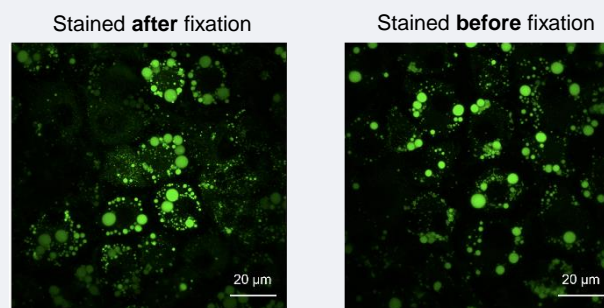
Lipid droplets in adipocytes were stained with LipiDye or Nile Red. Nile Red also stained cytoplasm as well as lipid droplets, while LipiDye stained lipid droplets specifically and clearly. LipiDye has a higher sensitivity and S/N ratio compared to Nile Red. The signal intensity of LipiDye in lipid droplets were stronger than Nile Red (distance 0 ~10 μm), while non-specific signal of Nile Red in cytoplasm was relatively stronger than LipiDye (distance 10 ~20 μm).

Pre-adipocyte (3T3-L1) differentiation



The differentiation processes of pre-adipocyte : 3T3-L1 were observed with LipiDye. Along with differentiation, lipid droplets also grew to a large size.

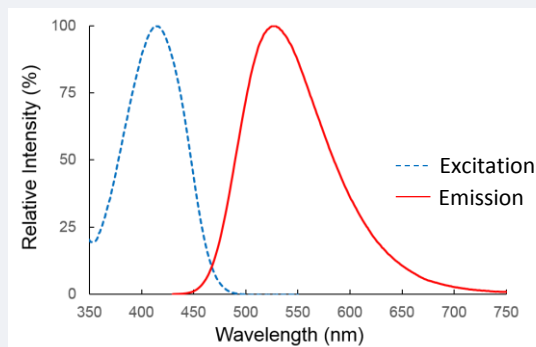
Staining data



LipiDye was applied to cultured adipocytes after (left) or before (right) paraformaldehyde fixation. Regardless of fixation timing, LipiDye detected lipid droplets at a high sensitivity.

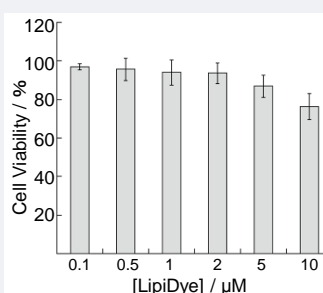
✘Methanol fixation is NOT recommended because it may affect structure of lipid droplets. Use a cross-link type of reagent such as paraformaldehyde.

Spectral property



A set of filters for conventional green fluorescence dyes such as FITC and GFP is not compatible with LipiDye. Please use an appropriate filter set.

Cytotoxicity



Cytotoxicity of LipiDye was tested by MTT assay using HeLa cells. Any cytotoxicity or adverse effect were not found when LipiDye was used at the recommended dosage (1 μM).

Product Information

[Manufacturer : FNA]

Product Name	Size	Catalog #	Storage
LipiDye <Lipid Droplet Green>	0.1 mg	FDV-0010	RT

NOTE ✘ All products here are research use only, not for diagnostic use.
 ✘ Specs might be changed for improvement without notice.

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